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Fostering Gifted Students' Affective Development: A Look at the Impact of Academic Self-Concept

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Abstract

The purpose of this paper is to provide educators and counselors with a framework for understanding the academic self-concepts of gifted students. As academic self-concept is theoretically linked with other constructs, including academic achievement and aspirations, it is vital that educators and counselors are aware of the experiences gifted students may face. Implications for educators and counselors are discussed.

Keywords

Gifted, self-concept, affective development

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Teachers often see signs that affect—the social and emotional aspects of students' lives—plays an important role in their classrooms. For example, teachers routinely witness the effects of test anxiety, mood, emotional trauma, peer influences, confidence, and motivation on academic performance. These emotional and social factors are rarely reported on report cards or standardized test results, but practitioners have always believed that non-academic factors influence how well students learn, perform, and achieve.

Over the past decade or so, researchers within the fields of gifted education and talent development have explored these affective influences on achievement. For example, researchers have explored psychological adjustment, the psychological and behavioral consequences of lack of challenge in school, depression and self-esteem, and stress and coping (Kanevsky & Keighley, 2003; Gallagher, Harradine, & Coleman, 1997; Plucker & McIntire, 1996).

Self-concept is one affective construct that has received a great deal of attention in the scholarly literature and popular media. Self-concept is, at the most simplistic level, an idea or set of ideas one has about oneself. A child has distinct views of self within various areas, including general self-concept and more specific social, physical, and academic self-concepts (Marsh & Shavelson, 1985). During adolescence, these ideas become more abstract and differentiated as more complex forms of self-representation take shape (Erikson, 1968; Harter, 1986). The ideas students hold about themselves provide useful information for teachers, as students' self-concept impacts student learning and achievement.

In particular, the academic self-concept, or how one feels about his or her academic abilities, is helpful for understand-

ing a variety of school-related issues, including educational and occupational aspirations and school achievement (Hoge & Renzulli, 1993). Many researchers have split academic self-concept into mathematical and verbal self-concepts, along with a general "school" self-concept (e.g., Plucker & Stocking, 2001). A student's perceptions of his or her math ability may influence the kinds of math activities he or she pursues, such as puzzles, math brain teasers, and competitions. Likewise, a student's perceptions of his or her verbal ability may influence the kinds of verbal activities he or she pursues, such as books of differing reading levels, writing or literature courses, and word games. In turn, participation in these sorts of activities can influence future decisions, such as enrollment in advanced courses, and even choice of college major and future occupation. Math and verbal self-concepts have also been linked to achievement in school. Stu-

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dents who feel better about their math or verbal ability tend to perform better in the corresponding subject area (Marsh, Parker, & Barnes, 1985; Marsh & Yeung, 1998).

Self-Concept and Gifted Students

The general academic self-concept of gifted children has been addressed in a variety of ways and toward a number of different ends, but one thing remains the same: academic self-concept is important for academically gifted students. In gen-

eral, gifted students tend to have positive general academic self-concepts, which are higher than those of less academically talented peers (Hoge & Renzulli, 1993), as well as higher than their own social self-concepts (Ross & Parker, 1980).

General academic self-concept has been positively linked to achievement for gifted students. Some researchers (e.g., Calsyn & Kenny, 1977; Garg, 1992) have found that a student must first do well in school to have a high academic self-concept, while others (e.g., Marsh, Trautwein, Lüdtke, Köller, & Baumert, 2005; Valentine, DuBois, & Cooper, 2004) support the notion that a high academic self-concept is a precursor to achievement. Strong arguments exist for both sides, suggesting that the relationship between academic achievement and academic self-concept is likely reciprocal (Hamachek, 1995; House, 2000). Further, Marsh (1991) found high school students' academic self-concepts are an indicator of their decisions to attend postsecondary education. And, among college students, academic self-concept is related to aspirations for graduate school (Rinn, 2007) and career aspirations (Betz & Hackett, 1983).

The ramifications of a decrease in academic self-concept are many. Both socio-emotional and academic development could be hindered. For example, Harter (1992) found that, in a self-contained gifted program, students whose perceived competence decreased, experienced a corresponding decrease in intrinsic motivation to participate in the gifted program. Further, Marsh and Yeung (1998) found that academic self-concept is a predictor of course selection, even when taking into account students' school grades. Students with a low academic self-concept might be more likely to choose less challenging

classes and programs than students with a higher academic self-concept.

Specific math and verbal self-concepts may provide more detailed information about student functioning than general academic self-concept. Although gifted children tend to have more positive views of their general and specific abilities than other students (Brounstein, Holahan, & Dreyden, 1991), the relationship between achievement and self-concept in a particular academic area is not clear (Hoge & Renzulli, 1993). For example, a gifted student demonstrating strong mathematical and verbal achievement will not necessarily have both high mathematical and verbal self-concepts. As teachers, we cannot always assume gifted students' math or verbal self-concepts are based on their achievement, and vice-versa. Given the relationship between self-concept and other outcomes, this finding may be of concern to teachers of academically gifted students.

Two popular models of academic self-concept development exist within the field of gifted education that may provide insight regarding the needs of academically gifted students.

The Big Fish Little Pond Effect

When academically gifted students are put in self-contained or pull-out programs, attend Advanced Placement (AP) classes, accelerate into more advanced classes, or attend prestigious universities, they will experience a new environment with equally competent peers, usually more challenging materials, and more rigorous requirements. One reality they inevitably have to encounter is a more competent peer group than they are used to in a regular classroom. This could be exciting

and threatening at the same time. This is exciting because a peer group of equal academic caliber gives personal validation to one's identity and serves to mutually reinforce each other's talents and interests. This can be threatening, though, because individuals, particularly those who might already feel insecure, are likely to feel that the very talents people have touted about them and the top student status they have enjoyed in the regular classroom are no longer a sure thing; there are potentially more talented people in the new peer group.

When two students of the same ability or achievement level are put in different classrooms or programs, the one who is with the high ability or achievement group tends to experience a temporarily lower self-concept in respective domains than the one with the less able group. This effect has been labeled the Big Fish Little Pond Effect (BFLPE;

“The Big Fish Little Pond Effect is presumably based on a social comparison theory that argues that people derive their self-concept by comparing themselves with their immediate peer group.”

Marsh, Chessor, Craven, & Roche, 1995; Marsh & Parker, 1984). The BFLPE is presumably based on a social comparison theory that argues people derive their self-concept by comparing themselves with their immediate peer group as a frame of reference. In other words, a big fish that is used to being in a little pond may reassess his or her own competence when put into a larger pond, with even bigger fish.

Although the BFLPE model is not specific to gifted programs, facets of the BFLPE have been examined with gifted and high ability students ranging in grade from the early elementary years (Tymms, 2001) to the college years (Rinn, 2007), and the practical implications are obvious and have already produced repercussions in the gifted education community (e.g., Dai & Rinn, 2008; Plucker, Robinson, Greenspon, Feldhusen, McCoach, & Subotnik, 2004). It is important to note that the potential decrease in academic self-concept may not have any lasting effects (Moon, Feldhusen, & Dillon, 1994). For example, within the first few days in a three-week residential program, academically gifted children's math and verbal self-concepts were higher than average (Plucker & Stocking, 2001). Further, Marsh (1987) notes the BFLPE might be smaller for older students, as they “typically have some basis for the assessment of their own academic skills that is independent of the performances of their classmates, and they often know how the average ability level of their classmates compares with some broader frame of reference” (p. 282).

The Internal/External Frame of Reference Model

By understanding the development of math and verbal self-concept, we can design instructional opportunities to promote positive self-concept. One model that helps us understand the development of specific math and verbal self-concepts is the internal/external frame of reference model (I/E model; Marsh, 1986).

According to the I/E model, students base their math and verbal self-concepts on two simultaneous sets of

comparisons. The internal comparison (or “frame of reference”) includes an individual student’s appraisal of his or her ability in one academic area (e.g., math) compared to his or her ability in other academic areas (e.g., English). The external comparison is the student’s evaluation of competence in that academic area relative to the perceived ability of peers. Peer groups provide important information about relative standing in a given area (Festinger, 1954; Skaalvik & Rankin, 1990). Therefore, a student’s self-concept in mathematics, for example, is derived from his or her perceived math competence relative to how he or she performs in other subject areas and how strong he or she thinks his or her peers are in math. Of course, moving into a new, more talented, peer group might result in a BFLPE phenomenon.

The I/E model suggests that achievement in one area has a direct positive effect on self-concept in the related area (due to the external comparisons) and a negative effect on the self-concept in the other area (due to the internal comparisons). For example, a student’s verbal achievement would have a strong positive impact on his or her verbal self-concept and a moderate negative impact on his or her math self-concept. The competing effects of the external and internal comparisons largely cancel each other out, and a student’s math self-concept development may appear to be unrelated to his or her verbal self-concept, although he or she may have very similar mathematics and verbal achievement.

The I/E model has been applied to gifted students’ math and verbal self-concept development with some success. Williams and Montgomery (1995) found evidence of both internal and external comparisons in the self-concept development of a group of high school honors students. Plucker and Stocking

(2001) found that the I/E model successfully explained the math and verbal self-concept development of academically gifted students enrolled in an intensive summer residential program. In addition, they found evidence that the internal/external frame of reference model explains math and verbal self-concept development for students with both mathematical and verbal strengths, and students with strengths in either, but not both, areas. Recently, although they were not using a gifted sample, Marsh and Hau (2004) found support for the I/E model in a study that included students from 26 countries, illustrating the generalizability of the I/E model. Mui, Yeung, Low, and Jin (2000) found support for the I/E model with a sample of gifted, Chinese adolescents.

Further, despite often found differences in math and verbal self-concepts among males and females, such that males typically have higher math self-concepts (Williams & Montgomery, 1995) and females typically have higher verbal self-concepts (Marsh & Yeung, 1998), the I/E model appears to work the same for both males and females. Using a sample of 181 gifted adolescents, Rinn, McQueen, Clark, and Rumsey (2008) did not find gender differences within the I/E model, thus providing support for Marsh’s (1986) original notion that the I/E model is equally generalizable to males and females. Other researchers have also failed to find evidence for gender differences with regard to the I/E model (e.g., Marsh & Yeung).

Implications for Teachers and Counselors

Based on the BFLPE and the I/E model, Marsh and his colleagues (1995) suggested a number of strategies to decrease the negative effects of social comparison on student’s academic self-

concepts. We have elaborated upon and added to these suggestions in light of our research and experiences working with gifted and talented adolescents in a variety of instructional and social settings.

1. *Recognize the breadth of self-concepts that may be held by each talented student.*

The foundation of the I/E model is that a student may have very different self-concepts in different content areas, even if the student is equally successful in all areas. Assuming that a student sees him- or herself as very talented in English just because he or she tests well in all academic areas overlooks the potential impact of internal and external comparisons in that student's life. A teacher is better off examining the ways in which the gifted adolescent sees him- or herself as having academic strengths in some areas and weaknesses in others. Gifted adolescents see themselves as complex, multifaceted people, even within the area of academic performance, and educators and parents should try to see them in the same light.

2. *Self-concept should not be viewed as a means to its own end.* There is little credible evidence that boosting self-concept with praise and a lowered level of challenge provides lasting change in a student's intellectual achievement. Indeed, challenge may have a short-term, negative effect on self-concept but a positive long-term effect as a student's confidence slowly increases. In this way, even failure during a challenging task can lead to an enhanced and healthy self-concept within a specific academic area. Emphasizing a student's unique, realistic contribution, rather than praising a hollow intellectual success can boost self-confidence in a

challenging program. Although an unrealistically high academic self-concept is not healthy for gifted students' development, teachers should be aware of opportunities to provide reasonable feedback that will encourage students' positive academic self-concepts and perhaps lead to increased achievement.

“Information about learning styles, motivation, and self-concept can be very helpful when designing learning experiences for talented adolescents.”

3. *Consider information beyond grades and test scores when planning educational experiences for gifted and talented students.* Information about learning styles, motivation, and self-concept can be very helpful when designing learning experiences for talented adolescents. Learning more about our students will help us develop academic experiences to meet their affective needs without compromising intellectual rigor. For example, teachers can develop assessments in which students pursue projects of personal interest. Gifted students, like other students, benefit from the opportunity to express themselves through their work, and providing students with choices within a curriculum provides a unique basis for self-assessment and will likely result in increased motivation and positive self-concept. Depending on their age, gifted students can benefit

particularly from independent research projects that can be designed to answer questions of interest to the students. Several gifted education models (e.g., the *Schoolwide Enrichment Model*, Renzulli, 2005; the *Parallel Curriculum Model*, Tomlinson et al., 2002) have been shown to be especially effective in this regard.

4. *Balance student exposure to competitive, cooperative, and individualistic activities in the classroom.* Some gifted students may thrive in a highly competitive atmosphere, but that type of environment can foster social comparisons that may lower self-concept, as per the BFLPE. Students are better served if a variety of approaches are used in the classroom. For example, we visited an advanced math class at a summer program in time to see a rousing game of “Around the World,” where students were pitted one against the other in a test of speed and trigonometry facts. A number of students clearly enjoyed the game and appreciated the opportunity to compare their skills to others, but others were nervous and self-conscious. At another intensive summer program, students working on team-based technology projects often faltered due to their lack of familiarity with cooperative activities in which one group was not “the winner” (Plucker & Gorman, 1995). Students need to experience a mixture of cooperative (working with others), individualistic (competing against oneself), and competitive (competing against others) environments to become comfortable with learning under a variety of such contexts.
5. *Consider each student's participation in multiple instructional contexts.* Gifted students spend their academic lives in a variety of instructional settings (Stocking,

1998). In addition to the regular classroom, they often attend after-school, weekend, and summer programs, all of which allow the talented adolescent to interact with a different peer group than is found in regular classroom settings. The impact of a particular instructional context on academic self-concept may be influenced by the perceived competence of peers, the method for selecting students for a program, the ability of the teacher to work with academically talented students, the level of competition, type of curriculum and level of curriculum differentiation, and assessment strategies (Plucker & Stocking, 2002). With talented adolescents often participating in several such contexts over the course of a year, teachers should consider how all of these experiences influence adolescents' views of themselves.

6. *Provide students with feedback about individual growth instead of comparisons with other students in the class.* This principle is an elaboration of the previous recommendation about balancing competition, collaboration, and individualism in the classroom. If students are exposed to all of these experiences, it is important for teachers to provide students with feedback about their progress within each area. With respect to individualistic experiences, students should receive feedback about performance relative to their own baselines and expected growth. In some cases, assessing gifted students according to the standards for their age is irrelevant to the instructor and the students, who realize that age or grade-based standards far underestimate the

students' potential performance. Regarding cooperative activities, students should receive information about their interpersonal skills, and students should receive a wide range of data about their performance relative to peers during and after competitive learning experiences. In general, this detailed feedback aids students in assessing their own abilities and forming a realistic self-concept.

“Students should receive information about their interpersonal skills, and students should receive a wide range of data about their performance relative to peers.”

7. *Provide teachers with opportunities to learn more about the special needs of academically gifted adolescents.* Any teacher can benefit from specialized training in new instructional strategies, and those methods that are effective for instructing gifted students can be beneficial to many students. However, when gifted students' instructional needs are not met in the classroom, whether in pullout programs or summer residential programs, students can suffer a variety of negative affective consequences, including negative impacts on academic self-concepts. A highly trained teacher (with regard to differentiation) is more likely to provide the optimal level of challenge and support that will encourage gifted students' affective and intellectual development.

Conclusion

The discussion of gifted students' self-concept development should not focus solely on academic self-concept. Self-concept researchers are widening their focus to include self-concept in areas as diverse as interpersonal relations and athletic ability (e.g., Bain & Bell, 2004; Chanal, Marsh, Sarrazin, & Bois, 2005; Rinn & Wining, 2007). Future research should extend the application of the I/E model and the BFLPE to address the influence of academic self-concept on the development of nonacademic dimensions, such as self-concept in peer relations, physical attractiveness, and inter- and intra-personal relations, as well as examine changes in the I/E model and BFLPE across time. In the meantime, these preceding recommendations provide a good starting point for practitioners interested in fostering their gifted students' academic self-concepts.

References

- Bain, S. K., & Bell, S. M. (2004). Social self-concept, social attributions, and peer relationships in fourth, fifth, and sixth graders who are gifted compared to high achievers. *Gifted Child Quarterly*, 48, 167-178.
- Betz, N., & Hackett, G. (1983). The relationship of mathematical self-efficacy expectations to the selection of science-based college majors. *Journal of Vocational Behavior*, 23, 329-345.
- Brounstein, P. J., Holahan, W., & Dreyden, J. (1991). Change in self-concept and attributional styles among academically gifted adolescents. *Journal of Applied Social Psychology*, 21, 198-218.
- Caslyn, R. J., & Kenny, D. A. (1977). Self-concept of ability and perceived evaluation of others: Cause or effect of academic achievement? *Journal of Educational Psychology*, 69, 136-145.
- Chanal, J. P., Marsh, H. W., Sarrazin, P. G., & Bois, J. E. (2005). Big-fish-little-pond effects on gymnastics self-concept: Social comparison processes in a physical setting. *Journal of Sport & Exercise Psychology*, 27, 53-70.
- Dai, D. Y., & Rinn, A. N. (2008). The big-fish-little-pond effect: What do we know and where do we go from here? *Educational Psychology Review*, 20, 283-317.
- Erikson, E. H. (1968). *Identity, youth, and crisis*. New York: W. W. Norton.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, 7, 117-148.
- Gallagher, J., Harradine, C. C., & Coleman, M. R. (1997). Challenge or boredom? Gifted students' views on their schooling. *Roeper Review*, 19, 132-136.
- Garg, R. (1992). Academic and nonacademic self-concepts: Influence of recent life-change experiences and demographic, social, and health variables. *NACADA Journal*, 13, 43-52.
- Hamachek, D. (1995). Self-concept and school achievement: Interaction dynamics and a tool for assessing the self-concept component. *Journal of Counseling and Development*, 73, 419-425.
- Harter, S. (1986). Processes underlying the construction, maintenance, and enhancement of the self-concept in children. In J. Suls & A. G. Greenwald (Eds.), *Psychological perspectives on the self* (Vol. 3, pp. 137-181). Hillsdale, NJ: Lawrence Erlbaum.
- Harter, S. (1992). The relationship between perceived competence, affect, and motivational orientation within the classroom: Processes and patterns of change. In A. K. Boggiano & T. S. Pittman (Eds.), *Achievement and motivation: A social-developmental perspective* (pp. 77-114). New York: Cambridge University Press.

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- House, J. D. (2000). The effect of student involvement on the development of academic self-concept. *Journal of Social Psychology, 140*, 261-263.
- Hoge, R. D., & Renzulli, J. S. (1993). Exploring the link between giftedness and self-concept. *Review of Educational Research, 63*, 449-465.
- Kanevsky, L. & Keighley, T. (2003). To produce or not to produce? Understanding boredom and the honor in underachievement. *Roeper Review, 26*, 20-28.
- Marsh, H. W. (1986). Verbal and math self-concepts: An internal/external frame of reference model. *American Educational Research Journal, 23*, 129-149.
- Marsh, H. W. (1987). The big-fish-little-pond effect on academic self-concept. *Journal of Educational Psychology, 79*, 280-295.
- Marsh, H. W. (1991). The failure of high ability schools to deliver academic benefits: The importance of academic self-concept and educational aspirations. *American Educational Research Journal, 28*, 445-480.
- Marsh, H. W., Chessor, D., Craven, R., & Roche, L. (1995). The effects of gifted and talented programs on academic self-concept: The big fish strikes again. *American Educational Research Journal, 32*, 285-319.
- Marsh, H. W., & Hau, K. (2004). Explaining paradoxical relations between academic self-concepts and achievements: Cross-cultural generalizability of the internal/external frame of reference predictions across 26 countries. *Journal of Educational Psychology, 96*, 56-67.
- Marsh, H. W., & Parker, J. W. (1984). Determinants of student self-concept: Is it better to be a relatively large fish in a small pond even if you don't learn to swim as well? *Journal of Personality and Social Psychology, 47*, 213-231.
- Marsh, H. W., Parker, J. W., & Barnes, J. (1985). Multidimensional adolescent self-concepts: Their relationship to age, sex, and academic measures. *American Educational Research Journal, 22*, 422-444.
- Marsh, H. W., & Shavelson, R. (1985). Self-concept: Its multifaceted, hierarchical structure. *Educational Psychologist, 20*, 107-123.
- Marsh, H. W., Trautwein, U., Lüdtke, O., Köller, O., & Baumert, J. (2005). Academic self-concept, interest, grades, and standardized test scores: Reciprocal effects models of causal ordering. *Child Development, 76*, 397-416.
- Marsh, H. W., & Yeung, A. S. (1998). Longitudinal structural equation models of academic self-concept and achievement: Gender differences in the development of math and English constructs. *American Educational Research Journal, 35*, 705-738.
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- Moon, S. M., Feldhusen, J. F., & Dillon, D. R. (1994). Long-term effects of an enrichment program based on the Purdue Three-Stage Model. *Gifted Child Quarterly*, 38, 38-48.
- Mui, F. L. L., Yeung, A. S., Low, R., & Jin, P. (2000). Academic self-concept of talented students: Factor structure and applicability of the internal/external frame of reference model. *Journal for the Education of the Gifted*, 23, 343-367.
- Plucker, J. A., & Gorman, M. E. (1995). Group interaction during a summer course on invention and design for high ability secondary students. *The Journal of Secondary Gifted Education*, 6, 258-272.
- Plucker, J. A., & McIntire, J. (1996). Academic survivability in high potential, middle school students. *Gifted Child Quarterly*, 40, 7-14.
- Plucker, J. A., Robinson, N. M., Greenspon, T. S., Feldhusen, J. F., McCoach, D. B., & Subotnik, R. F. (2004). It's not how the pond makes you feel, but rather how high you can jump. *American Psychologist*, 59, 268-269.
- Plucker, J. A., & Stocking, V. B. (2001). Looking outside and inside: Self-concept development of gifted adolescents. *Exceptional Children*, 67, 535-548.
- Plucker, J. A., & Stocking, V. B. (2002, April). *An extension of the I/E model of self-concept to multiple contexts and its implications for gifted students*. Paper presented at the annual conference of the American Educational Research Association, New Orleans, LA.
- Renzulli, J. S. (2005). Applying gifted education pedagogy to total talent development for all students. *Theory into Practice*, 44, 80-89.
- Rinn, A. N. (2007). Effects of programmatic selectivity on the academic achievement, academic self-concepts, and aspirations of gifted college students. *Gifted Child Quarterly*, 51, 232-245.
- Rinn, A. N., McQueen, K. S., Clark, G., & Rumsey, J. L. (2008). Gender differences in gifted adolescents' math/verbal self-concepts and math/verbal achievement: Implications for the STEM fields. *Journal for the Education of the Gifted*, 32, 34-53.
- Rinn, A. N., & Wininger, S. R. (2007). Sports participation among academically gifted adolescents: Relationship to the multidimensional self-concept. *Journal for the Education of the Gifted*, 31, 35-56.
- Ross, A., & Parker, M. (1980). Academic and social self-concepts of the academically gifted. *Exceptional Children*, 47, 6-11.
- Skaalvik, E. M., & Rankin, R. J. (1990). Math, verbal, and general academic self-concept: The internal/external frame of reference model and gender differences in self-
-

concept structure. *Journal of Educational Psychology*, 82, 546-554.

Stocking, V. B. (1998). "What I did on my vacation": Summer options for gifted students. *NASSP Bulletin*, 82, 93-100.

Tomlinson, C. A., Kaplan, S. N., Renzulli J. S., Purcell, J., Leppien, J., & Burns, D. (2002, November). *The Parallel Curriculum: A design to develop high potential and challenge high-ability learners*. Paper presented at the annual conference of the National Association for Gifted Children, St. Paul, MN.

Tymms, P. (2001). A test of the big fish in a little pond hypothesis: An investigation into the feelings of seven-year-old pupils in school. *School Effectiveness and School Improvement*, 12, 161-181.

Valentine, J. C., DuBois, D. L., Cooper, H. (2004). The relation between self-beliefs and academic achievement: A meta-analytic review. *Educational Psychologist*, 39, 111-133.

Williams, J. E., & Montgomery, D. (1995). Using frame of reference theory to understand the self-concept of academically able students. *Journal for the Education of the Gifted*, 18, 400-409.

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